In the Claims:

1-31. Cancelled.

32.(Previously Presented) A method of encrypting data, comprising:

choosing a modulus C for modular calculations, wherein the modulus C is selected from the group consisting of (a) w-big and w-heavy, and (b) w-little and w-light; and

using the modulus to encrypt data.

33. (Previously Presented) The method of claim 32, further comprising:

performing a ring arithmetic function on numbers, including (a) using a residue number multiplication process, (b) converting to a first basis using a mixed radix system, and (c) converting to a second basis using a mixed radix system.

34. (Previously Presented) The method of claim 32, wherein the modulus C is of the form $2^w - L$, and wherein L is a low Hamming weight odd integer less than $2^{(w-3)/2}$.

35. (Currently Amended) The method of claim 34, further comprising:

calculating the modulus C by a process including

(a) splitting a number $P < 2^{2w}$ into 2 w-bit words H_1 and L_1;

(b) calculating $S_1 = L_1 + (H_1 2^{x1}) + (H_1 2^{x2}) + ... + (H_1 2^{xk}) \div H_1$, wherein $(w-3)/2 > x_1 > x_2 > ... > x_k > 0$ and $k << w$;

(c) splitting S_1 into two w-bit words H_2 and L_2;

(d) computing $S_2 = L_2 + (H_2 2^{x1}) + (H_2 2^{x2}) + ... + (H_2 2^{xk}) + H_2$;

(e) computing $S_3 = S_2 + (2^{x1} + ... + 2^{xk} + 1)$;

(f) determining the modulus C by comparing S_3 to 2w, wherein the modulus C = S_2 if $S_3 < 2^w$, and wherein the modulus C = $S_3 - 2^w$ if $S_3 \geq 2^w$;

wherein the modulus C is a residue.

36. (Previously Presented) The method of claim 32, wherein the modulus C is of the form $2^w + L$, and wherein the modulus C has a Hamming weight close to 1.

37. (Previously Presented) The method of Claim 32, wherein the method of encrypting data comprises a method of cryptographic hashing.

38. (Previously Presented) The method of Claim 32, wherein the modulus C is w-big and w-heavy.

39. (Previously Presented) The method of Claim 32, wherein the modulus C is w-little and w-light.

40.(New) A method of encrypting data, comprising:

receiving data; and

using a modulus C to encrypt the data, wherein C is a w-bit number, wherein the modulus C is of the form $2^w - x$, wherein $x = \pm L$, wherein L is a low Hamming weight odd integer less than $2^{(w-1)/2}$, and wherein the modulus C is selected from the group consisting of (a) w-big and w-heavy, and (b) w-little and w-light; and

outputting the encrypted data.

41.(New) The method of claim 40, wherein the modulus C is w-big.

42.(New) The method of claim 40, wherein the modulus C is w-heavy.

43.(New) The method of claim 40, wherein the modulus C is w-little.

44.(New) The method of claim 40, wherein the modulus C is w-light.

45.(New) The method of claim 40, wherein $x = L$.

46.(New) The method of claim 40, wherein $x = - L$.

47. (New) The method of claim 40, wherein the step of encrypting the data includes the step of performing a ring arithmetic function on numbers, including (a) using a residue number multiplication process, (b) converting to a first basis using a mixed radix system, and (c) converting to a second basis using a mixed radix system.

48. (New) The method of claim 40, further comprising:

calculating the modulus C by a process including

(a) providing a number $P < 2^{2w}$;

(b) splitting P into 2 w-bit words H_1 and L_1;

(c) calculating $S_1 = L_1 + (H_1 2^{x1}) + (H_1 2^{x2}) + \ldots + (H_1 2^{xk}) + H_1$, wherein $(w-3)/2 > x_1 > x_2 > \ldots > x_k > 0$ and $k << w$;

(d) splitting S_1 into two w-bit words H_2 and L_2;

(e) computing $S_2 = L_2 + (H_2 2^{x1}) + (H_2 2^{x2}) + \ldots + (H_2 2^{xk}) + H_2$;

(f) computing $S_3 = S_2 + (2^{x1} + \ldots + 2^{xk} + 1)$;

(g) determining the modulus C by comparing S_3 to 2w, wherein the modulus C is a residue, wherein the modulus $C = S_2$ if $S_3 < 2^w$, and wherein the modulus $C = S_3 - 2^w$ if $S_3 \geq 2^w$.

49. (New) The method of claim 40, wherein the modulus C has a Hamming weight close to 1.

50. (New) The method of Claim 40, wherein the method of encrypting data comprises a method of cryptographic hashing.